

# Science Flight Report

## Operation Ice Bridge August 2011



**UAF Alaska Flight No 11**  
**Mission Plan: Icy Bay**

### Flight Report Summary

<b>Aircraft</b>	<b>DHC-3 Otter</b>
<b>Flight Number</b>	UAF-11
<b>Flight Request</b>	11M009
<b>Flight Hours</b>	8.0
<b>Take off time</b>	8:00:00.00 Z from Ultima Thule Outfitters
<b>Landing time</b>	16:00:00.00 Z at Ultima Thule Outfitters
<b>Date</b>	Sept 12 2011, Day of Year 255
<b>Purpose of Flight</b>	LiDAR surveys of glaciers within Icy Bay.
<b>Aircraft Status</b>	Airworthy.
<b>Sensor Status</b>	operational.
<b>Significant Issues</b>	None.
<b>Accomplishments</b>	<ul style="list-style-type: none"><li>• LiDAR profiles of glaciers within Icy Bay. DMS images were acquired coincident with the LiDAR data.</li></ul>
<b>Planned Events</b>	<ul style="list-style-type: none"><li>• This concludes all flights for UAF this summer.</li></ul>

### Science Data Report Summary

This mission performed LiDAR surveys of glaciers within Icy Bay.

LiDAR data were collected at a height of 500-650 meters above the glacier surface, and mapped a 0.5 km wide swath along the centerline of the glaciers. This swath map consists of measurements from individual laser shot points on a roughly 1 meter by 1 meter grid. The individual point measurements of the glacier surface latitude, longitude and elevation have an accuracy of approximately  $\pm 10$  cm.

The DMS imagery acquires distortion-calibrated images with 70 percent overlap, covering a swath width identical to the LiDAR, with 10 cm resolution (pixel to pixel spacing) on the ground. The DMS images are directly coupled with the LiDAR IMU, so precise timing, position and pointing angles (aircraft attitude) are recorded with every image.

Geographic keywords: (Juneau Icefield, Alaska)

Repeat Mission: yes (2010, 2009, 2008, 2007, 2005, 2000)

Instrument	Instrument Operational		Data Volume for days 255	Instrument Issues
	Target area	Entire Flight		
<b>UAF LiDAR</b>	Yes	No	~2.0 GB in raw binary format	None
<b>GPS</b>	Yes	Yes	~.8 GB in raw binary format	None
<b>IMU</b>	Yes	Yes	~500 MB in raw binary format	None
<b>DMS</b>	Yes	No	~20 GB in jpeg format	None

### **Mission Log (Chris Larsen)**

Today's mission is LiDAR surveys of glaciers within Icy Bay. Calm and clear conditions were present through the flight. People onboard included Paul Claus (pilot), and Chris Larsen. The flight was ended at near Juneau.

#### **Individual instruments on board the aircraft:**

**LiDAR:** The UAF LiDAR system worked well.

**GPS:** System worked normally. No problems.

**IMU:** System worked well. No issues.

**DMS:** System worked well. No issues.

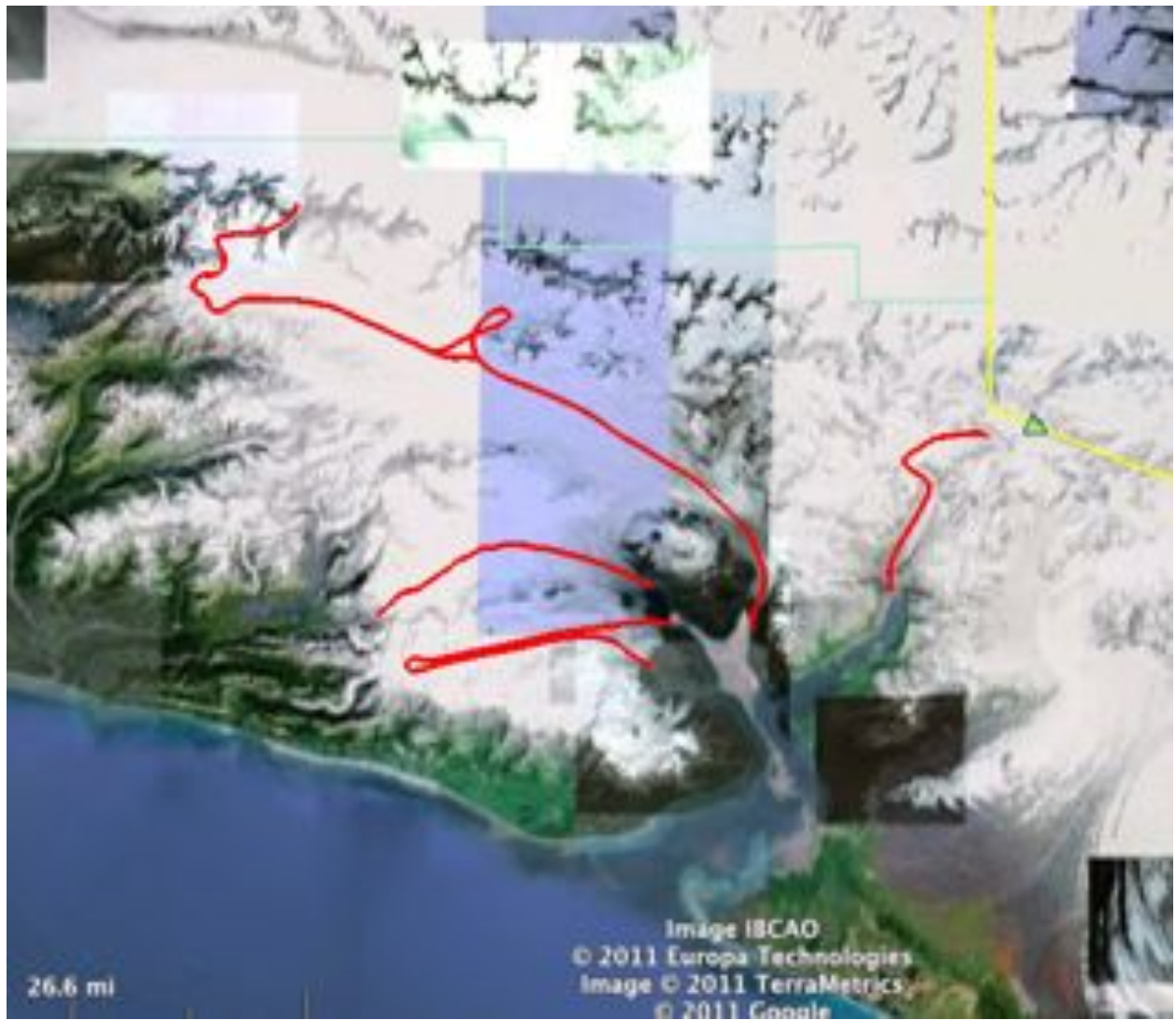
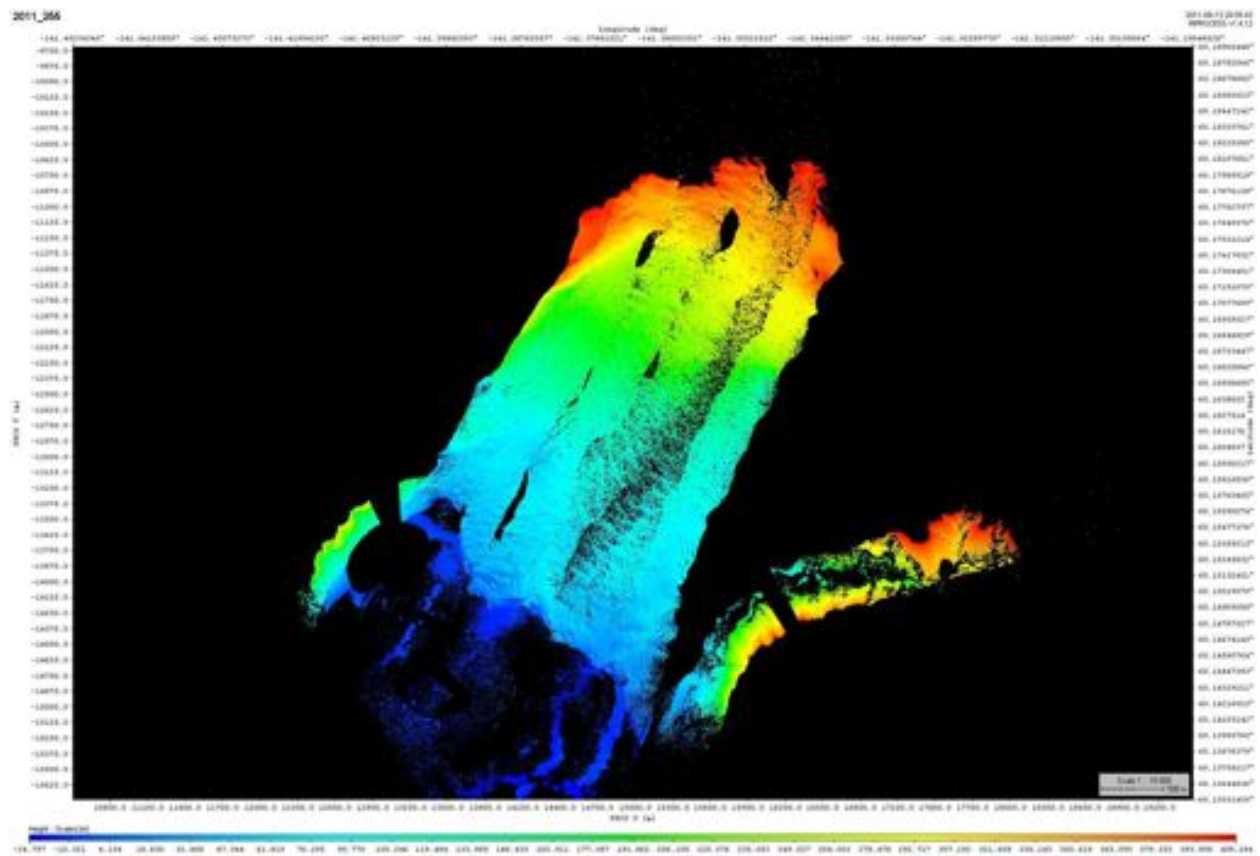


Figure 1: LiDAR ground tracks.



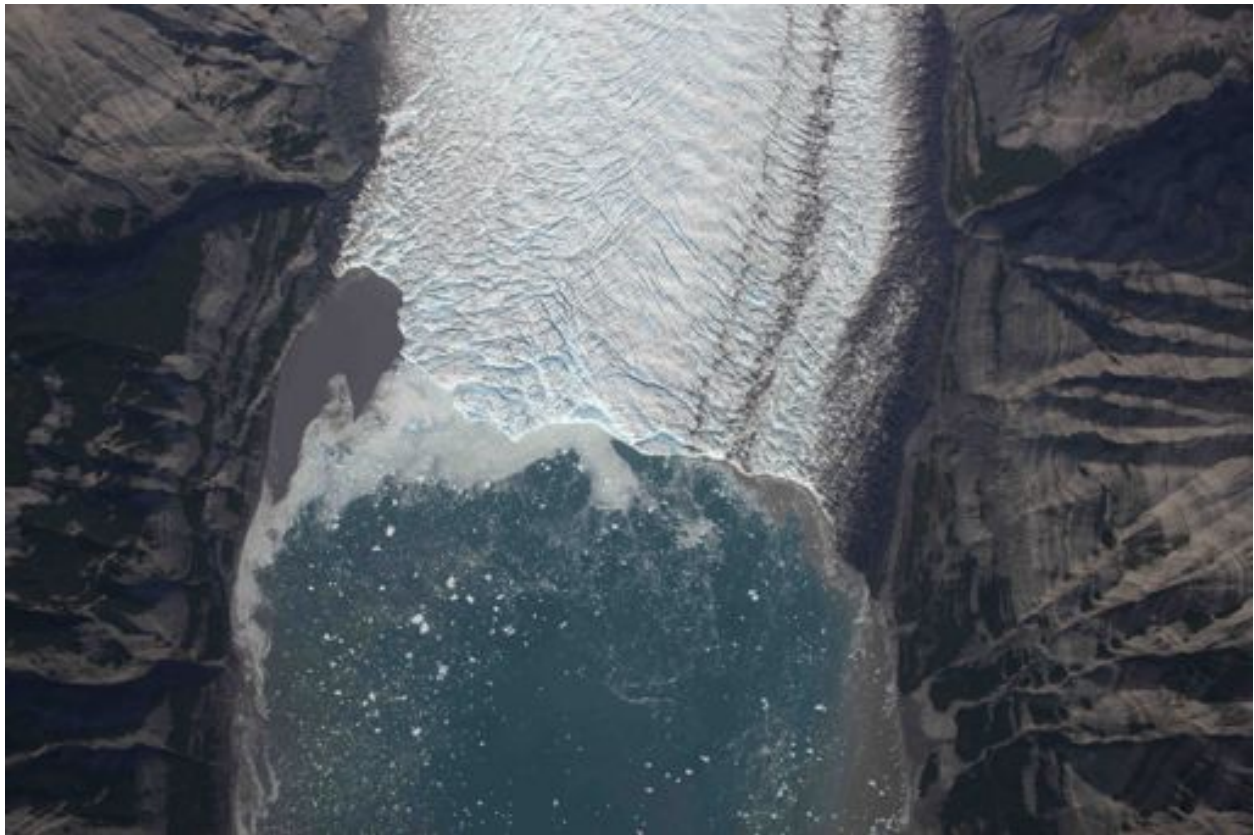


Figure 3: DMS overview image of the Yahtse terminus from 12,000 ft.